

BELZONA® KNOW-HOW

FOR REPAIRING DAMAGED CONCRETE AND RESTORING DRAINAGE

TCC-9

Common Problems

- Deterioration of structures through chemical attack.
- Spalling and cracking due to corrosion of steel reinforcement.
- Inadequate or incorrectly designed falls causing ponding of aggressive or hazardous chemicals.

Set-up

All work should be carried out in strict accordance with the relevant Belzona® Instructions For Use.

Product and application technique should be selected based on an assessment of the nature and degree of damage together with full knowledge of all chemicals present.

The application site must be available for sufficient time to allow for thorough cleaning, surface preparation, application and curing of the materials used.

Preparation

Any existing failed coating should be completely removed.

Any loose concrete, particularly around steel reinforcement, should be chiselled away to expose fresh sound concrete.

Chemically contaminated concrete must be thoroughly washed, using steam cleaning, high pressure water washing or detergent solutions followed by washing with clean water.

All concrete surfaces to which the Belzona® product is to bond must be abraded to expose the aggregate, using grit blasting or mechanical scarification equipment.

Exposed steelwork must be abraded to remove all the corrosion, ideally by grit blasting.

New concrete should be allowed to cure for a minimum of 28 days. Surface laitence should then be removed by grit blasting or mechanical scarification.

Conditioning

Application of the **Belzona® 4000** Series products require the use of **Belzona® 4911** to achieve maximum adhesion to the substrate. This should be mixed in accordance with the relevant Belzona® Instructions For Use, and stippled well into the surface using a stiff bristled brush.

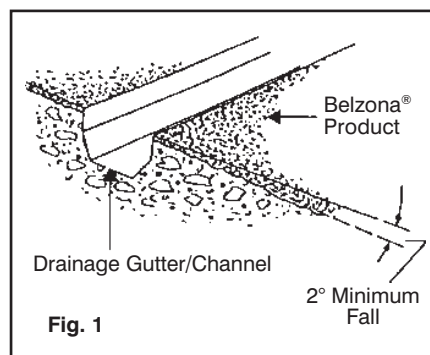
The application of the **Belzona® 4000** Series product should commence immediately the substrate has been conditioned.

Application to Horizontal Surfaces

Belzona® 4111 should be used to rebuild damaged surfaces ensuring that the application is kept within the prepared and conditioned areas. When rebuilding and protecting extensive areas of concrete, a minimum thickness of 1/4 inch (6mm) should be achieved and it is recommended that 3/16 inch (5mm) batons are fixed to the floor to control the thickness of **Belzona® 4111** applied.

A straight edge should be used to even out the surface of the Belzona® material before compacting and smoothing using a steel trowel.

Belzona® 4111 may be applied at increased thicknesses of up to 2 inches in a single application on horizontal surfaces to create falls which should be a minimum 2° (fig. 1).



To assist drainage, channels may be created in the Belzona® material before it has cured by drawing a suitable round bar across the surface.

Application to Vertical Surfaces

Belzona® 4141 may be applied at thicknesses up to 5 inches (12.5 cm), without the use of permanent shuttering. Temporary supports should be used particularly when reforming sharp corners. **Belzona® 4111** may be applied at up to 3/16 of an inch (5mm) thickness without support, but fixed shuttering will be required for applications at greater thicknesses.

The Belzona® product should then be allowed to fully cure in accordance with the relevant Belzona® Instructions For Use before returning to service.

Where additional chemical protection is required, reference should be made to Belzona® Know-How Systems Leaflet TCC-15 "Sealing and Protecting Containment Areas".

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Belzona® Technical Comparison:

| Product | Consistency | Compressive Strength | Slump Resistance | Working Life at 60°F (15°C) | Full Chemical Cure at 60°F (15°C) |
|---------------|-------------|----------------------|------------------|-----------------------------|-----------------------------------|
| Belzona® 4111 | Mortar | High | Low | 45 minutes | 10 days |
| Belzona® 4141 | Mortar | Low | Very High | 90 minutes | 12 days |

Belzona® System Selector:

| Main System Requirement | Belzona® 4111 | Belzona® 4141 |
|-----------------------------------------------------------------------|---------------|---------------|
| Rebuilding horizontal surfaces | • | |
| Rebuilding vertical surfaces - low stress | | • |
| Rebuilding vertical surfaces subject to mechanical impact or abrasion | • | |

Recommended Equipment:

| | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mixing and application tools are included in each pack of Belzona®. Prior to carrying out the repair, however, it is important that all other necessary tools and equipment are available on site. Every situation will be somewhat different, but the basic requirements could include those shown to the right. | <ul style="list-style-type: none">• Chisels• Grit Blasting or Mechanical Scarification Equipment• Steam Cleaning or High Pressure Water Washing Equipment• Power Mixing Tools• Stiff Bristled Brushes | <ul style="list-style-type: none">• Trowels• Timber Batons• Hot Air Blowers for Surface Drying and for Cold Weather Application• Suitable Protective Clothing/ Equipment |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

For more complete technical information, please refer to the appropriate Belzona® Product Specification Sheet.
For detailed instructions on surface preparation, mixing and cure, please refer to the appropriate Belzona® Instructions For Use.
Comprehensive Health and Safety information is provided with the product.
All of these are available through your local Belzona® Engineer

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